REMARKS

Applicant acknowledges the Examiner's indication that claims 25, 26 and 31 are allowed and that claims 4-24 and 29-30 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. We submit, however, that the Applicant is entitled to greater protection than that offered by these claims.

Applicant has amended independent claim 27 to recite that the thermal reserve maintains the temperature differential between the thermal reserve and field winding. As this amendment recites a feature already recited in independent claim 1 (unamended), we submit that the change should not require further search or consideration by the Examiner.

Prior Art Rejections

Claims 1-3 and 27-28 have been rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over Fritz et al. (U.S. 4,204,134) in view of Lloyd (U.S. 5,066,638).

We submit, however, that neither Fritz nor Lloyd, separately or in combination, disclose "a thermal reserve concentrically arranged on the field winding support and thermally coupled to the field winding to maintain a temperature differential between the thermal reserve and the field winding not greater than about 10 K," as recited in amended claim 1.

Fritz's damper 13 is not a thermal reserve. Damper 13 of Fritz serves to shield the cooled windings 7 from radiation heat load due to the environment (i.e., to minimize winding thermal load from the surrounding warmer boundary). This is accomplished in Fritz by cooling damper 13, which absorbs heat from the surroundings due to conduction, convection, and/or radiation, through utilization of coolant that maintains damper 13 at a relatively low temperature. Because the temperature of damper 13 is much less than the temperature of the surroundings, damper 13 reduces the amount of heat transferred, by, for example, radiation, to the windings from the environment. Additionally, by providing space between the damper 13 and windings 7, heat transfer is further minimized by reducing or eliminating the heat transferred via conduction and/or convection. As noted by Fritz, the coolant flowing through channels 12 of the damping shield is at a higher temperature than the temperature at which the windings are maintained,

specifically, the winding temperature is "about 4.5 K" and the coolant is "about 5-7 K" in the channels 12. See col. 3, lines 64 et al. To minimize the heat transferred to the windings from the damper 13, the damper is spaced apart from the windings. See Figs. 1 and 2. By removing the damper 13 radially away from windings 7, a "shield" is constructed to insulate the cooled superconducting windings from the surroundings. On the other hand, applicant's thermal reserve serves to absorb heat generated by the superconducting winding, for example, in the event of cryocooler failure.

Additionally, Fritz fails to teach or disclose a thermal reserve "concentrically arranged on the field winding support and thermally coupled to the field winding to maintain a temperature differential between the thermal reserve and the field winding not greater than about 10 K." As stated by Applicant,

> In the event of cryocooler failure, heat buildup in rotor winding 35 causes rotor winding to loose its superconducting characteristics. The rate of heat buildup is reduced, however, by thermal reserve 40. Thermal reserve 40 is thermally conductive, having a thermal conductivity sufficiently high to limit the temperature differential between the thermal reserve and winding 35 to some predetermined value. (See Page 5, lines 19-23.)

Fritz, on the other hand, discloses a system in which coolant flowing through a coolant loop is used to cool both the windings 7 and the damper 13. The damper itself does not maintain the temperature differential between the damper and the superconducting windings. As stated by Fritz, "To remove the damping and cold, shield losses at damping temperature that remains electrically acceptable, an additional amount of helium is frequently required." See col. 4, lines 24-28. Thus, Fritz does not provide any of the advantages offered by applicant's system and method of operation. Because Fritz's damper is spaced from his windings, the damper does not readily absorb heat generated by the windings. Worst yet, if Fritz's cryocooler were to fail, the coolant required to cool both the windings and the damper might not be available to maintain the temperature difference.

The Examiner also rejected claims 27-28 as being unpatentable over Fritz et al. in view of Lloyd. We submit that neither reference discloses or fairly suggests a method of limiting the rate of increase in the temperature of a superconducting winding including concentrically arranging a thermal reserve on and in thermal contact with the superconducting winding, the thermal reserve

maintaining a temperature differential between the thermal reserve and the field winding no greater than about 10 K, as recited in claim 27.

With regard to dependent claims 2, 3 and 28, applicant submits that these dependent claims are allowable over the cited references for at least the same reasons that claims 1 and 27 are allowable.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

27. (Twice Amended) A method of limiting the rate of increase in the temperature of a superconducting winding, comprising:

concentrically arranging a thermal reserve on and in thermal contact with the superconducting winding, and

the thermal reserve maintaining a temperature differential between the thermal reserve and the field winding no greater than about 10 K.